

Claims

1. Shielding gas device for pressure die-casting machines, in particular for processing magnesium melts, with a melting furnace (1) having openings for supplying the shielding gases, and having various gas sources and a container (21) situated downstream therefrom for receiving a mixture of the individual shielding gas components which is connected via at least one metering device (7) to the openings in the melting furnace, characterized in that
 - the container is a pressure accumulator (21),
 - the openings in the melting furnace (1) are provided with inlet nozzles (9, 9a), and
 - these inlet nozzles are impinged on by a metering device (7), the operating pressure of which is equal to or less than the pressure in the pressure accumulator (21), but is high enough to atomize the shielding gas mixture downstream from the inlet nozzles (9, 9a).
2. Shielding gas device according to Claim 1, characterized in that the metering process is performed continuously or discontinuously.
3. Shielding gas device according to Claim 1, characterized in that the inlet nozzles (9, 9a) are distributed on the melting furnace (1) in such a way that rapid and uniform distribution of the shielding gas mixture is achieved.
4. Shielding gas device according to Claim 3, characterized in that the inlet nozzles (9, 9a) are placed on the melting furnace (1) in such a way that gas flows to the leakage points (45, 46) from the furnace (1) that are unavoidably present.
5. Shielding gas device according to Claim 3, characterized in that the inlet nozzles (9, 9a) are configured in such a way that they are protected from being wetted by the melt, and thus, from contamination or plugging.
6. Shielding gas device according to Claim 1, characterized in that the operating pressure of the metering device (7, 7a) is adapted to the type of inlet nozzles (9, 9a).

7. Shielding gas device according to Claim 6, characterized in that the operating pressure is regulated and monitored, and that a signal device (37) is active when there are deviations from the desired operating pressure.
8. Shielding gas device according to Claim 6, characterized in that multiple metering devices for different furnace sections (39, 40) or for different furnaces connected in parallel are fed by the pressure accumulator (21).
9. Shielding gas device according to Claim 8, characterized in that each metering unit (7, 7a) is provided with a device (33, 34) for adjusting the metered quantity.
10. Shielding gas device according to Claim 9, characterized in that an operating mode sensor (34) is associated with each metering unit for determining the metered quantity.
11. Shielding gas device according to Claim 6, characterized in that each metering unit (7, 7a) is provided with a control logic system (26) that receives the signals (35) concerning the furnace status.
12. Shielding gas device according to Claim 1, characterized in that a mixing device (2) having a mixing chamber (19) in which the gases forming the shielding gas mixture are combined under pressure is associated with the pressure accumulator (21).
13. Shielding gas device according to Claim 12, characterized in that pressure nozzles (20) for supplying the gases to be mixed are provided on the mixing chamber (19).
14. Shielding gas device according to Claim 12, characterized in that pressure regulating devices (14, 16) are associated with the feed lines (11, 12) to the mixing chamber (19).
15. Shielding gas device according to Claim 13, characterized in that a pressure regulating device (16) for maintaining equal pressure is associated with the feed lines (11, 12) to the mixing chamber (19).

16. Shielding gas device according to Claim 13, characterized in that a device (23) for monitoring the pressure is provided in the connecting line (22) between the mixing chamber (19) and the pressure accumulator (21).

17. Shielding gas device according to Claim 12, characterized in that a gas analyzer is associated with the mixing chamber (19) by which the concentration of the gas mixture may be monitored.

18. Shielding gas device according to Claim 17, characterized in that the gas analyzer compares the gas mixture in the mixing chamber (19) to a reference mixture, and when there are deviations sends a signal to the mixing device (2).

[see source for FIGS 1 through 6]